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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/575,665 | 08/22/2007 | Hyun Jong Shin | LEE0062US | 1835 |
| 23413 7590 01/12/2009 CANTOR COLBURN, LLP 20 Church Street 22nd Floor Hartford, CT 06103 | | | | |
| EXAMINER RUMP, RICHARD M | | | | |
| ART UNIT 4181 | | PAPER NUMBER | | |
| NOTIFICATION DATE 01/12/2009 | | DELIVERY MODE ELECTRONIC | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

Office Action Summary

Application No.

10/575,665

Applicant(s)

SHIN ET AL.

Examiner

Richard M. Rump

Art Unit

4181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/ISD)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 1: 05/04/2007.

DETAILED ACTION

Status of Application

Claims 6-11 are pending and presented for examination. Claims 1-5 and 12 are drawn to a non-elected group. This election was made without traverse. **THIS RESTRICTION REQUIREMENT IS MADE FINAL.**

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 04 May 2007, is acknowledged and the references listed thereon have been considered by the examiner on the attached copy of the PTO-1449 form.

Specification

The disclosure is objected to because of the following informalities: On page 6, line 24 of the specification a space is missing between urea its chemical formula.

Appropriate correction is required.

Claim Objections

Claims 7, 9, 11 objected to because of the following informalities: The numerical value of 150 is used in reference to a particle size, but no units are disclosed following it. In claim 7 the placement of the colon can cause the claim to be easily misconstrued as to what the sublimable material listed thereon is. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 6, 8 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Vanderspurt *et al.* (hereinafter referred to as Vanderspurt, US PGPub No. 20070093382).

Regarding claims 6 and 8, **Vanderspurt** discloses in [0023] a method for making a ceria-based mixed metal oxide catalyst using the following steps: 1) dissolving salts of the cerium and at least one other constituent in water to form a dilute metal salt solution; 2) adding urea, either as a solid or aqueous solution; 3) heating the solution of metal salt and urea to near boiling (which may include boiling) to coprecipitate homogeneously a mixed-oxide of the cerium and the one or more other constituent(s) as a gelatinous coprecipitate; 4) optionally maturing, if and when beneficial, the gelatinous coprecipitate in accordance with a thermal schedule; 5) replacing water in the solution with a water miscible, low surface-tension solvent, such as dried 2-propanol; 6) drying the coprecipitate and solvent to remove substantially all of the solvent; and 7) calcining the dried coprecipitate at an effective temperature, typically

moderate, for an interval sufficient to remove adsorbed species and strengthen the structure against premature aging.

Regarding claim 10, Vanderspurt discloses that the urea may be added as a liquid as concentrations are given (0.02mol/L to 2.0 mol/L) ([0023]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grasselli *et al.* (hereinafter referred to as Grasselli, US Patent No. 4424141).

Regarding claims 6 and 7, Grasselli discloses a process wherein potassium hydroxide, ammonium molybdate, and silica are prepared (It is well known in the art that crushing is a commonly used practice), and then intermixed with cobalt and nickel nitrate along with an aqueous solution of potassium and iron nitrates respectively. This formation is then dried and calcined to produce the final catalyst product (column 1, lines 48-60). See example 1 for a further example. Numerous other mixtures such as alcohols can be used as a liquid medium (column 4, lines 51-66). While the calcining time is not expressly stated, nor is a temperature between 400 and 500 °C, it would be obvious to one having an ordinary level of skill in the art at the time of invention to try to

perform the calcining step at a temperature and time sufficient enough to result in the wanted removal of unwanted material or phase transformation.

Regarding the claimed chemical formula wrought from instant claim 7, Grasselli discloses a catalytic composition (evident in Grasselli claim 1 as :A_aG_bL_cD_dE_eQ_fO_x; wherein: A is an alkali metal, Ti, Cu, Ag and mixtures thereof; G is Ni, Co, Mn, Mg, a Group IIA element, IIB element or mixtures thereof; L is Fe, Cr, Ce, V and/or Eu; D is Bi, Te or mixtures thereof; E is P, As, B, Sb, Ge, Sn, Si, Ti, Zr, rare earth and/or U or mixtures thereof; Q is Mo and/or W; and wherein a is 0.001-2, b is 0.01-10 (equivalent to instant compositional value 'a'), c is 0.01-8, d is 0.1-8, e is 0-3, and f is 11-13.5. x is determined by the valence state of the other elements present. However, the instant claimed composition limitations are not expressly stated, but merely overlapped. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (MPEP 2144.05). (recited explicitly in column 3 line 65 bridging to column 4 line 36 of Grasselli)

Regarding claim 9, Grasselli discloses that the catalytic support is calcined, however within where in the process is not expressly stated. Grasselli does give mention that as an example the calcination process of the catalytic support may be done during the final calcination step (column 8, line 63). It would be obvious to one having an ordinary level of skill in the art at the time of invention to calcine the catalyst in an earlier step in order to remove unwanted impurities from the catalyst, for example any unwanted oxides or organic species (such as unwanted oxides in a titania catalyst). Furthermore while the time frame and temperature at not expressly stated, it would be

obvious to one having an ordinary level of skill in the art to attempt the calcination process at numerous times and temperatures until one that resulted in the desired properties was achieved (See *In Re: Aller*). Furthermore, a process that can be done in one simultaneous step versus that of multiple steps is not patentable motivated by the fact that one step would be a time saver and be more economical (save money).

Regarding claim 11, a pre-catalyst precipitate such as propylene is added at an amount of 1.8% (example 4).

Citation of Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a) US 7022643 – Discloses a process for creating a molybdate catalyst.
- c) JP 2001-048817 (Provided in IDS) – Discloses a catalyst very similar to the instant case.
- d) US 20070264174 (Vanersput) – Discloses a catalyst support made from ceria.

Conclusion

Claims 6-11 have been rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard M. Rump whose telephone number is (571)270-

5848. The examiner can normally be reached on Monday through Friday 7:30 AM-5:00 PM (-5 GMT).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MICHAEL MARCHESCHI/
Primary Examiner, Art Unit 1793

/R. M. R./
Examiner, Art Unit 4181